We claim:

1. A method for reducing the peak-to-average power ratio of a communication signal comprising the steps of:

(a) sequencing a data signal according to a data vector to thereby create a sequenced data signal;

(b) modulating a first plurality of carrier waves at a second plurality of frequencies with said sequenced data signal to thereby create a modulated signal;

(c) measuring the peak-to-average power ratio of the modulated signal;

(d) comparing said power ratio with a predetermined threshold;

(e) if said power ratio exceeds said predetermined threshold, sequencing said data signal according to a data vector different from previous data vectors to thereby create a sequenced data signal different from previous sequenced data signals and repeating steps (b)-(e) until said power ratio does not exceed said predetermined threshold;

(f) if said power ratio does not exceed said predetermined threshold, appending to the modulated signal a data map signal associated with the data vector for which said power ratio does not exceed said predetermined threshold to thereby create an appended signal;

(g) sampling said appended signal;

(h) reducing amplitude of said samples which exceed a predetermined range to thereby create a reduced amplitude signal;

(i) filtering said reduced amplitude signal to thereby create said communication signal with a reduced peak-to-average power ratio.

2. The method to Claim 1, further comprising the step of reducing amplitude of samples adjacent to the samples exceeding the threshold.

3. In a multi-carrier communication system, a method of transmitting data comprising the steps of:

(a) sequencing the data according to one or more unique sequences;

(b) modulating one or more of the unique sequences of data;

(c) selecting one of the modulated sequences of data based on the PAPR of that sequence;

(d) filtering said selected one to remove amplitude peaks outside a threshold band to thereby create a filtered signal; and,

(e) transmitting the filtered signal over the multi carrier communication system.

4. The method according to Claim 3, wherein the step of filtering includes the step of comparing samples of the selected one to a threshold and reducing the amplitude of samples exceeding the threshold.

5. The method according to claim 4, further comprising the step of reducing the amplitude of samples adjacent to the samples exceeding the threshold.

6. In a multi-carrier communication system with a linear amplifier, a method of preventing limiting of the amplifier comprising the steps of:

(a) sequencing data to be transmitted based upon a resultant PAPR of the modulated sequence;

(b) modulating the sequenced data;

(c) sampling the modulated sequenced data;

(d) reducing the amplitude of samples which are outside a predetermined threshold; and,

(e) transmitting the resultant signal with a reduced PAPR to thereby prevent limiting of the amplifier.

7. The method according to Claim 6, further comprising the step of reducing the amplitude of samples adjacent to the samples outside a predetermined threshold.

8. In a multi-carrier communication system for transmitting data, a method for forming a data signal that reduces the required power of a transmitter comprising the steps of:

(a) providing the data to be transmitted in one or more unique sequences;

(b) modulating the one or more unique sequences thereby creating one or more unique modulated sequences;

(c) selecting for transmission one of the one or more unique modulated sequences based on the PAPR of the unique modulated sequences; and,

(d) reducing amplitudes of the selected one which are outside a predetermined range to thereby form a data signal that reduces power required to transmit the signal.

9. The method according to Claim 8, wherein the step of reducing amplitudes includes the step of comparing samples of the selected one to a threshold and reducing the amplitude of samples exceeding the threshold.

10. The method according to claim 9, further comprising the step of reducing the amplitude of samples adjacent to the samples exceeding the threshold.

11. In a multi-carrier communication system, a transmitter for transmitting data with multiple carriers comprising:

a modulator for modulating multi-carrier symbols with the data;

a processor for measuring the PAPR of the modulated data;

a logic device for comparing the PAPR with a predetermined threshold;

a processor for re-sequencing the data; and,

an amplitude filter for reducing peaks of the modulated data signal that are outside a predetermined range.

12. The system of Claim 11, wherein the amplitude filter is a FIR filter.

13. The system of Claim 11, wherein the amplitude filter is an IIR filter.